

# ChemComm

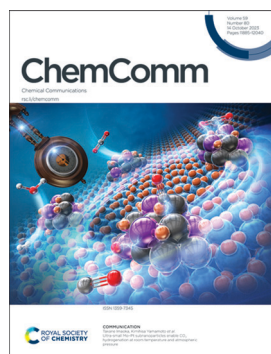
Chemical Communications

[rsc.li/chemcomm](https://rsc.li/chemcomm)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS 59(80) 11885-12040 (2023)



### Cover

See Takane Imaoka, Kimihisa Yamamoto *et al.*, pp. 11947–11950. Image reproduced by permission of Kimihisa Yamamoto from *Chem. Commun.*, 2023, 59, 11947.



### Inside cover

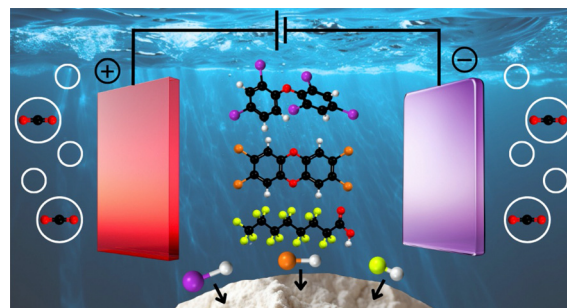
See Astrid M. Müller *et al.*, pp. 11895–11922. Image reproduced by permission of Astrid M. Müller and Madeleine K. Wilsey from *Chem. Commun.*, 2023, 59, 11895.

## HIGHLIGHT

11895

### Advanced electrocatalytic redox processes for environmental remediation of halogenated organic water pollutants

Madeleine K. Wilsey, Teona Taseska, Ziyi Meng, Wanqing Yu and Astrid M. Müller\*

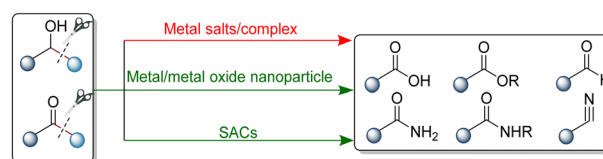


## FEATURE ARTICLES

11923

### Aerobic oxidative C–C bond cleavage and functionalization for the synthesis of value-added chemicals

Peng Zhou, Ziliang Yuan, Jie He, Tingfeng Fang, Bing Liu\* and Zehui Zhang\*



## Editorial Staff

### Executive Editor

Richard Kelly

### Deputy Editor

Harriet Riley

### Editorial Production Manager

Helen Saxton

### Development Editors

Danny Andrews, Ershad Abubacker

### Senior Publishing Editor

Becky Webb

### Publishing Editors

Kirstine Anderson, Matthew Bown, Laura Cooper, Hannah Fielding, Clare Fitzgerald, Anoushka Handa, Claire Harding, Alan Holder, Charlie Palmer, Rosie Rothwell, Donna Smith, Laura Smith

### Editorial Assistant

Jade Holliday

### Publishing Assistant

Natalie Ford

### Publisher

Jeanne Andres

For queries about submitted papers, please contact Helen Saxton, Editorial Production Manager in the first instance. E-mail [chemcomm@rsc.org](mailto:chemcomm@rsc.org)

For pre-submission queries please contact

Richard Kelly, Executive Editor.

Email [chemcomm-rsc@rsc.org](mailto:chemcomm-rsc@rsc.org)

Chemical Communications (print: ISSN 1359-7345; electronic: ISSN 1364-548X) is published 100 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WE.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WE, UK  
Tel +44 (0)1223 432398; E-mail [orders@rsc.org](mailto:orders@rsc.org)

2023 Annual (electronic) subscription price: £3,553 / US\$6,258. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at [www.rsc.org/ip](http://www.rsc.org/ip)

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

### Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail [advertising@rsc.org](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# ChemComm

Chemical Communications

[rsc.li/chemcomm](http://rsc.li/chemcomm)

## Editorial Board

### Chair

Douglas Stephan, University of Toronto

### Associate Editors

Lutz Ackermann, University of Göttingen

Davide Bonifazi, University of Vienna

Fengtao Fan, Chinese Academy of Sciences

Itaru Hamachi, Kyoto University

Michaele Hardie, University of Leeds

Kim Jelfs, Imperial College London

Chao-Jun Li, McGill University

David Lou, City University of Hong Kong

Connie Lu, University of Minnesota, US

Marinella Mazzanti, EPFL, Switzerland

Amy Prieto, Colorado State University

Yang Tian, East China Normal University

Sandeep Verma, Indian Institute of

Technology Kanpur

## Advisory Board

Brendan Abrahams, University of Melbourne

Polly Arnold, University of Edinburgh

Louise Berben, University of California, Davis

Penny Brothers, Australian National University

Wesley Browne, University of Groningen

Raffaella Buonsanti, EPFL

Luiz Henrique Catalani, University of São Paulo

Xiao-Ming Chen, Sun Yat-Sen University

Lifeng Chi, Soochow University

Arindam Chowdhury, Indian Institute of

Technology Bombay

Derrick Clive, University of Alberta

Seth Cohen, University of California, San Diego

Marcetta Darensbourg, Texas A&M University

Jyotirmayee Dash, Indian Association for the

Cultivation of Science

Gautam R. Desiraju, Indian Institute of

Science, Bangalore

Abhishek Dey, Indian Association for the

Cultivation of Science (IACS)

Josh Figueroa, University of California, San

Diego

Lutz Gade, University of Heidelberg

Sujit Ghosh, Indian Institute of Science

Education of Research, India

Nathan Gianneschi, University of California,

San Diego

Robert Gilliard Jr., Massachusetts Institute of

Technology, USA

David Gonzalez-Rodriguez, Autonomous

University of Madrid

Rebecca Goss, University of

St Andrews

Mike Greaney, University of Manchester

Shaojun Guo, Peking University

Michaele Hardie, University of Leeds

Amanda Hargrove, Duke University

Craig Hawker, University of California, Santa

Barbara

Feihe Huang, Zhejiang University

Todd Hudnall, Texas State University

Ilich A. Ibarra Alvarado, National University

of Mexico

Hiroshi Kageyama, Kyoto University

Jong Seung Kim, Korea University

Shu Kobayashi, University of Tokyo

Mi Hee Lim, Ulsan National Institute of

Science and Technology (UNIST)

Teck-Peng Loh, Nanyang

Technological University

Tien-Yau Luh, National Taiwan University

Doug MacFarlane, Monash University

Hiromitsu Maeda, Ritsumeikan University

Silvia Marchesan, University of Trieste

Nazario Martin, Complutense University of

Madrid

Keiji Maruoka, Kyoto University

Alexander Miller, University of North Carolina

at Chapel Hill

Wonwoo Nam, Ewha Womans University

Jean-Francois Nierengarten, University of

Strasbourg

Thalappil Pradeep, Indian Institute of

Technology Madras

S Ramakrishnan, Indian Institute of Science

Erwin Reisner, University of Cambridge

Robin Rogers, McGill University

Paolo Samori, University of Strasbourg

Ellen Sletten, University of California, Los

Angeles

David Smith, University of York

Mizuki Tada, Nagoya University

Christine Thomas, Ohio State University

Zhong-Qun Tian, Xiamen University

Tomas Torres, Autonomous University of

Madrid

Helma Wennemers, ETH Zurich

Judy Wu, University of Houston

Yi Xie, University of Science and Technology

of China

Xianran Xing, University of Science and

Technology Beijing

Shuli You, Shanghai Institute of Organic

Chemistry, Chinese Academy of Sciences

Atsuo Yamada, University of Tokyo

Qiang Zhang, Tsinghua University

Xi Zhang, Tsinghua University

Wenwan Zhong, University of California,

Riverside

Eli Zysman-Colman, University of St. Andrews

## Information for Authors

Full details on how to submit material for publication in Chemical Communications are given in the Instructions for Authors (available from <http://www.rsc.org/authors>).

Submissions should be made via the journal's homepage:

[rsc.li/chemcomm](http://rsc.li/chemcomm)

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study

for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Registered charity number: 207890

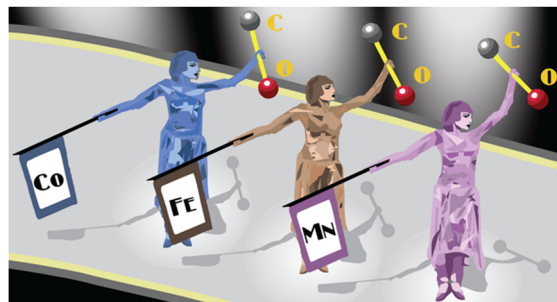


## FEATURE ARTICLES

11932

## Activation of robust bonds by carbonyl complexes of Mn, Fe and Co

Maxim R. Radzhabov and Neal P. Mankad\*

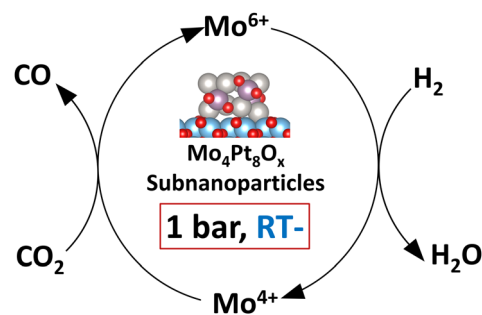


## COMMUNICATIONS

11947

Ultra-small Mo–Pt subnanoparticles enable CO<sub>2</sub> hydrogenation at room temperature and atmospheric pressure

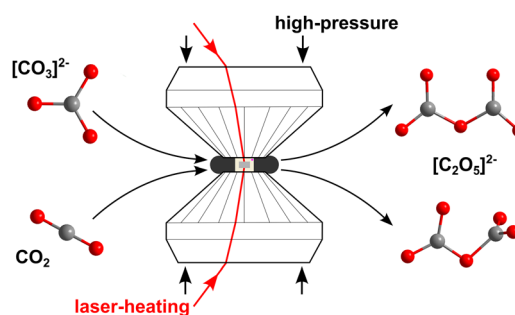
Augie Atqa, Masataka Yoshida, Masanori Wakizaka, Wang-Jae Chun, Akira Oda, Takane Imaoka\* and Kimihisa Yamamoto\*



11951

Twisted [C<sub>2</sub>O<sub>5</sub>]<sup>2-</sup>-groups in Ba[C<sub>2</sub>O<sub>5</sub>] pyrocarbonate

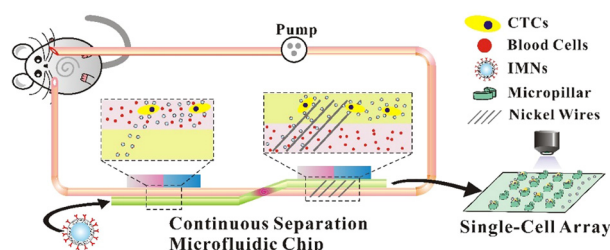
Dominik Spahr,\* Lkhamsuren Bayarjargal, Eiken Haussühl, Rita Luchitskaia, Alexandra Friedrich, Victor Milman, Timofey Fedotenko and Björn Winkler



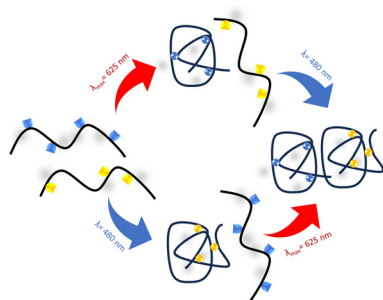
11955

Continuous magnetic separation microfluidic chip for tumor cell *in vivo* detection

Man Tang, Jiao Feng, Hou-Fu Xia, Chun-Miao Xu, Ling-Ling Wu, Min Wu, Shao-Li Hong, Gang Chen\* and Zhi-Ling Zhang\*



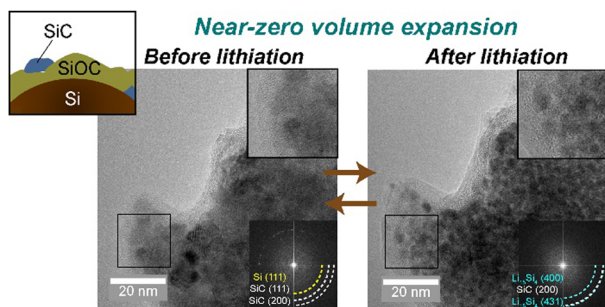
11959



### Simultaneously recorded photochemical action plots reveal orthogonal reactivity

Ishrath Mohamed Irshadeen, Vinh X. Truong, Hendrik Frisch\* and Christopher Barner-Kowollik\*

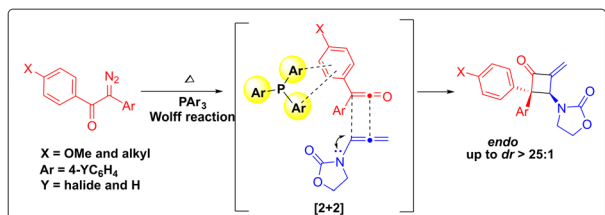
11963



### Near zero-strain silicon oxycarbide interphases for stable Li-ion batteries

Su Jeong Yeom, Tae-Ung Wi, Soon-Jae Jung, Myeong Seon Kim, Sang-Chae Jeon and Hyun-Wook Lee\*

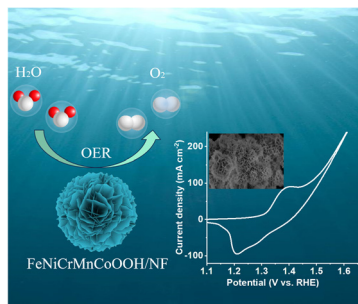
11967



### Stereo- and regiocontrol in intermolecular [2+2] cycloadditions between diarylketenes and allenamides to access substituted $\alpha$ -methylenecyclobutanones

Akshay Suresh Kshirsagar, Sayaji Arjun More and Rai-Shung Liu\*

11971



### Nanoflower-like high-entropy Ni–Fe–Cr–Mn–Co (oxy)hydroxides for oxygen evolution

Mingyuan Shi, Tianmi Tang, Liyuan Xiao, Jingyi Han, Xue Bai, Yuhang Sun, Siyu Chen, Jingru Sun, Yuanyuan Ma\* and Jingqi Guan\*

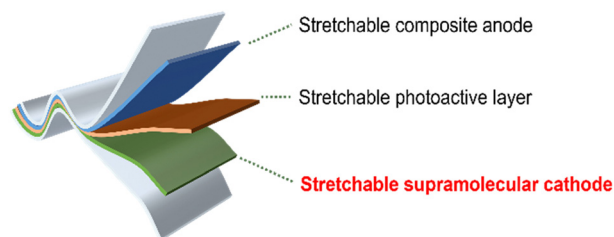


11975

### Supramolecular interface decoration on a polymer conductor for an intrinsically stretchable near-infrared photodiode

Fan Chen, Yiming Li, Yan Chen, Yi-Xuan Wang\* and Wenping Hu\*

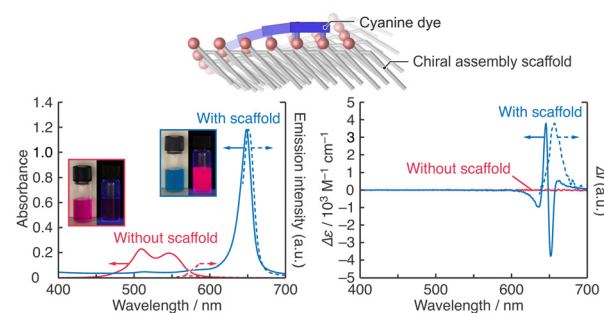
### Intrinsically stretchable photodiode



11979

### Controlled packing of chiral assembly scaffolds to promote chiral J-aggregation of carbocyanine dyes

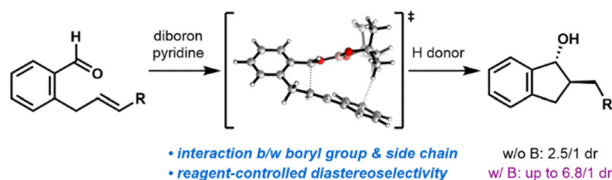
Naoya Ryu,\* Yusei Yamamoto, Yutaka Okazaki, Nanami Hano, Yuki Iwamoto, Tomohiro Shirotsaki, Shoji Nagaoka, Reiko Oda, Hiroataka Ihara and Makoto Takafuji



11983

### Stereochemical modulation of ketyl radical cyclization enabled by pyridine-boryl radicals: catalytic diastereoselective synthesis of *trans*-2-alkyl-1-indanols

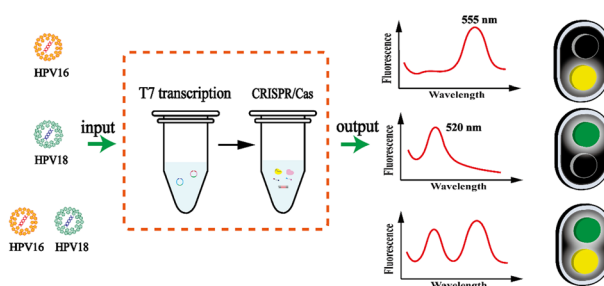
Somi Kim, Junhyuk Jo, Sunggi Lee\* and Won-jin Chung\*



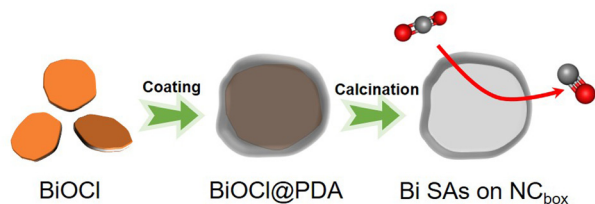
11987

### Target-mediated rolling circle transcription coupling with CRISPR/Cas12a-Cas13a for simultaneous detection of HPV16 and HPV18

Shiying Zhou, Shuyu Zhu, Zhen Huang, Jian Chen, Jiawei Li, Mei Yang, Liang Jin,\* Danqun Huo\* and Changjun Hou\*



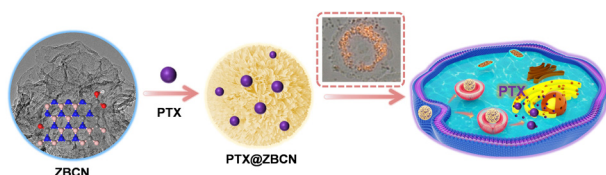
11991



### N-doped carbon nanocage-anchored bismuth atoms for efficient CO<sub>2</sub> reduction

Jiayi Li, Lingling Zhang, Shuai Gao, Xingmin Chen, Runjie Wu, Xiao Wang\* and Qiang Wang\*

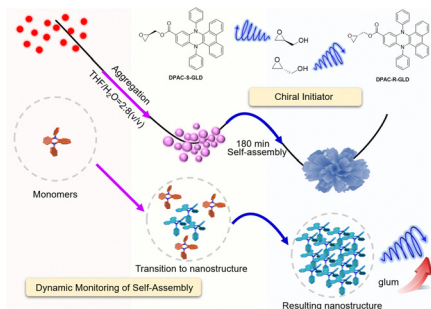
11995



### Flower-like porous BCN assembled by nanosheets for paclitaxel delivery

Haiyan Wang, Congling Wang, Yuxian Deng, Yuxin Han, Shuo Xiang, Hanning Xiao and Qunhong Weng\*

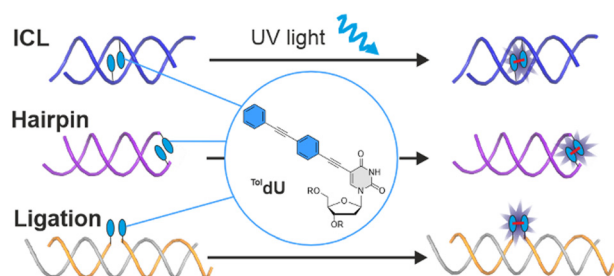
11999



### Dynamic monitoring of self-assembly by confining conformational changes of butterfly-motion-based molecules

Xuanying Chen, Jiacheng Chen, Wenyuan Su, Jianhua Su, Qi Zou\* and Zhiyun Zhang\*

12003



### A tolane-modified 5-ethynyluridine as a universal and fluorogenic photochemical DNA crosslinker

Hermann Neitz and Claudia Höbartner\*

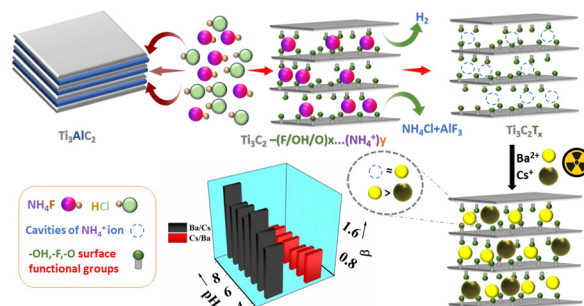


## COMMUNICATIONS

12007

Application of MXene for remediation of low-level radioactive aqueous solutions contaminated with  $^{133}\text{Ba}$  and  $^{137}\text{Cs}$ 

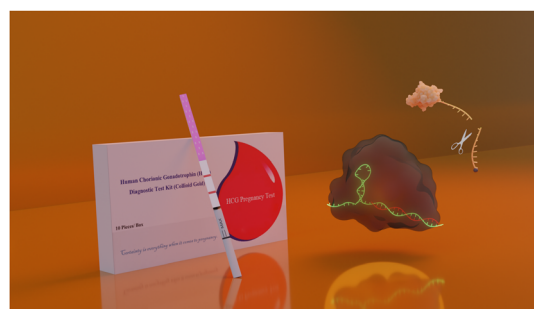
Vipul Vilas Kusumkar, Shalu Atri,\* Süleyman İnan, Maros Gregor, Tomas Roch, Hryhorii Makarov, Maria Caplovicova, Michal Galambos, Eva Viglasova, Gustav Plesch and Olivier Monfort\*



12011

## Rapid and sensitive point-of-care PTS-CRISPR assay for food safety monitoring of aflatoxin B1

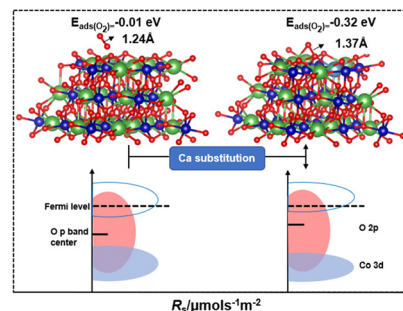
Ziqiang Deng, Jin Zhou, Chaoqun Wang, Jianyu Hu, Rui Liu\* and Yi Lv



12015

Ca substitution improves the catalytic activity of perovskite  $\text{LaCoO}_3$  toward toluene: comprehension of electronic structure alteration

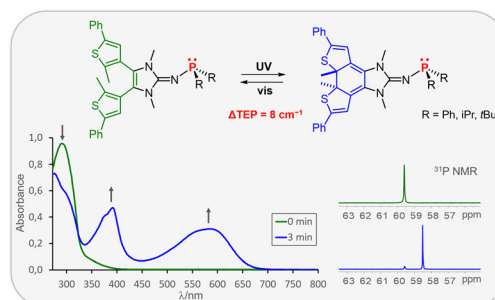
Hanlin Chen, Gaoling Wei, Zijuan You, Xiaoliang Liang,\* Peng Liu, Yiping Yang, Fuding Tan, Suhua Wang, Jieqi Xing and Steven L. Suib



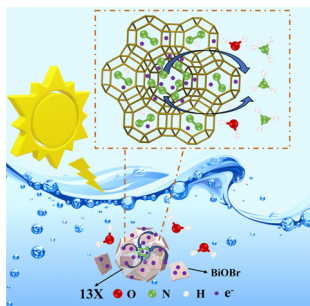
12019

## Photoswitchable electron-rich phosphines: using light to modulate the electron-donating ability of phosphines

Florenz Buß, Mowpriya Das, Daniel Janssen-Müller, Alexander Sietmann, Ankita Das, Lukas F. B. Wilm, Matthias Freitag, Michael Seidl, Frank Glorius\* and Fabian Dielmann\*



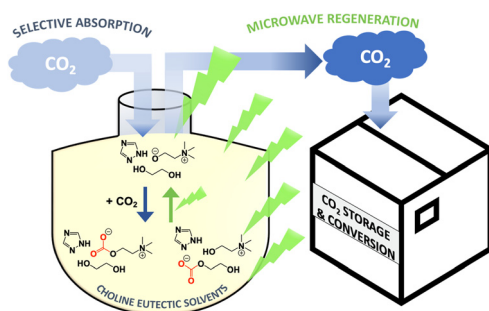
12023



### The role of 13X molecular sieves in photocatalytic nitrogen fixation

Jianuan Wen, Wei Cai, Zhicheng Zhang, Qin Zhong and Hongxia Qu\*

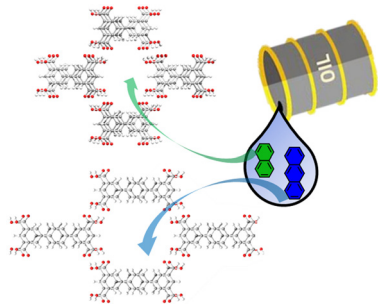
12027



### Formation of choline salts and dipolar ions for CO<sub>2</sub> reactive eutectic solvents

Ruth Dikki, Eda Cagli, Drace Penley, Metin Karayilan and Burcu Gurkan\*

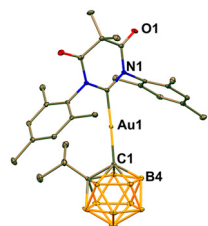
12031



### Selective adsorption of polycyclic aromatic hydrocarbons by isostructural hydrogen-bonded organic frameworks

Peng Cui,\* Qiang Zhu, Fangfang Zhang, Dongni Liu and Wenshuai Zhu\*

12035



### Fast and Bright Phosphorescence

### Highly phosphorescent carbene–metal–carboranyl complexes of copper(I) and gold(I)

Samuel L. Powley, Charlotte Riley, Hwan-Hee Cho, Nguyen Le Phuoc, Mikko Linnolahti,\* Neil Greenham\* and Alexander S. Romanov\*

